

CLAIMS

What is claimed is:

1. A method for determining the molecular weight of polymers comprising the steps of: preparing a thin layer of the polymer whose molecular weight is to be determined, determining the thickness of said layer by an ellipsometric method and calculating, with the thickness determined by said ellipsometric method, the molecular weight of the polymer material using the relationship

$$\text{layer thickness } d \sim [\eta]^{1/3}$$

$$\text{and } [\eta] = KM^A \quad (\text{Staudinger equation})$$

wherein,

$[\eta]$ = boundary viscosity number

K = constant [volume/mass]

A = constant, and

M = molecular weight

2. A method according to claim 1, wherein said thin layer is prepared on a substrate by a spin-coat process, wherein the substrate is rotated.

3. A method according to claim 2, wherein, after determining the thickness of the polymer layer, the layer is removed from said substrate by the application of a solvent.

4. A method according to claim 3, wherein, after removal of the polymer layer from the substrate by said solvent, said substrate is continued to be rotated for a predetermined time.

5. An apparatus for determining the molecular weight of polymers comprising a support structure supporting a substrate, an arrangement for providing on said substrate a thin layer of the polymer whose molecular weight is to be determined, and an ellipsometer disposed above said substrate for determining the thickness of said thin polymer layer disposed on said substrate.

6. An apparatus according to claim 5, wherein said ellipsometer has lenses provided with covers for protecting said lenses.

7. An apparatus according to claim 5, wherein said arrangement for providing said thin polymer layer includes means for supplying said polymer to said substrate and said substrate is supported by a support structure, which is rotatable about a vertical axis and which is rotated to subject the polymer supplied to said substrate to centrifugal forces for spreading said polymer on said substrate to form said thin layer.

8. An apparatus according to claim 7, wherein said arrangement includes means for supplying a solvent to said substrate for dissolving said polymer on said substrate and removing it therefrom while said support structure with said substrate disposed thereon is rotated.